

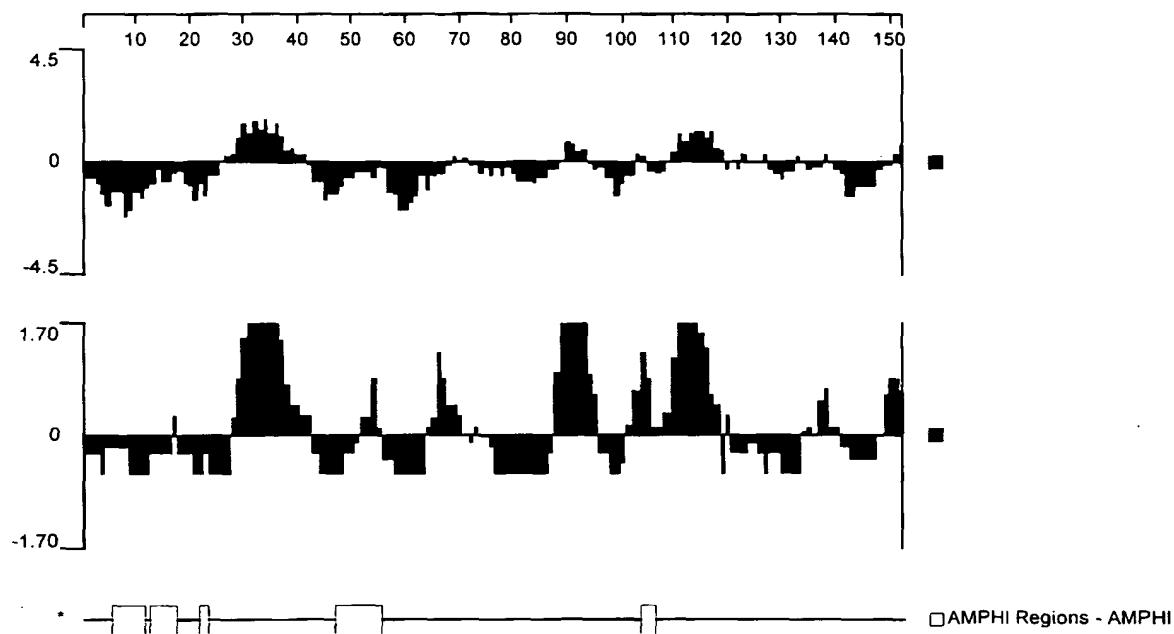
279Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 11

576-1

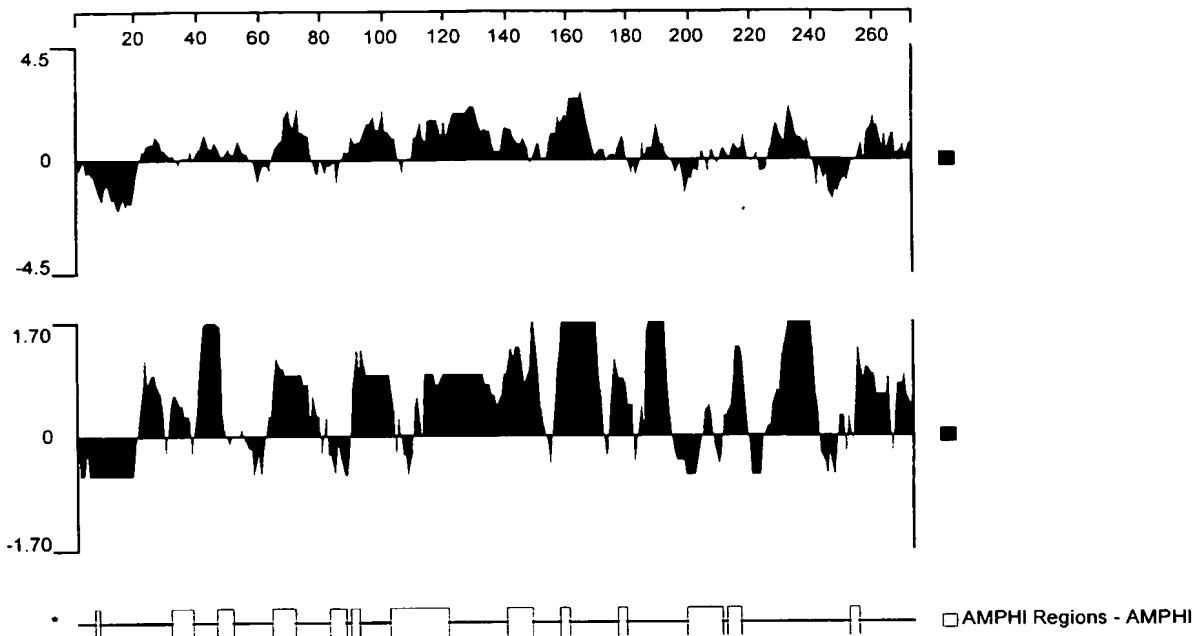
Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 12

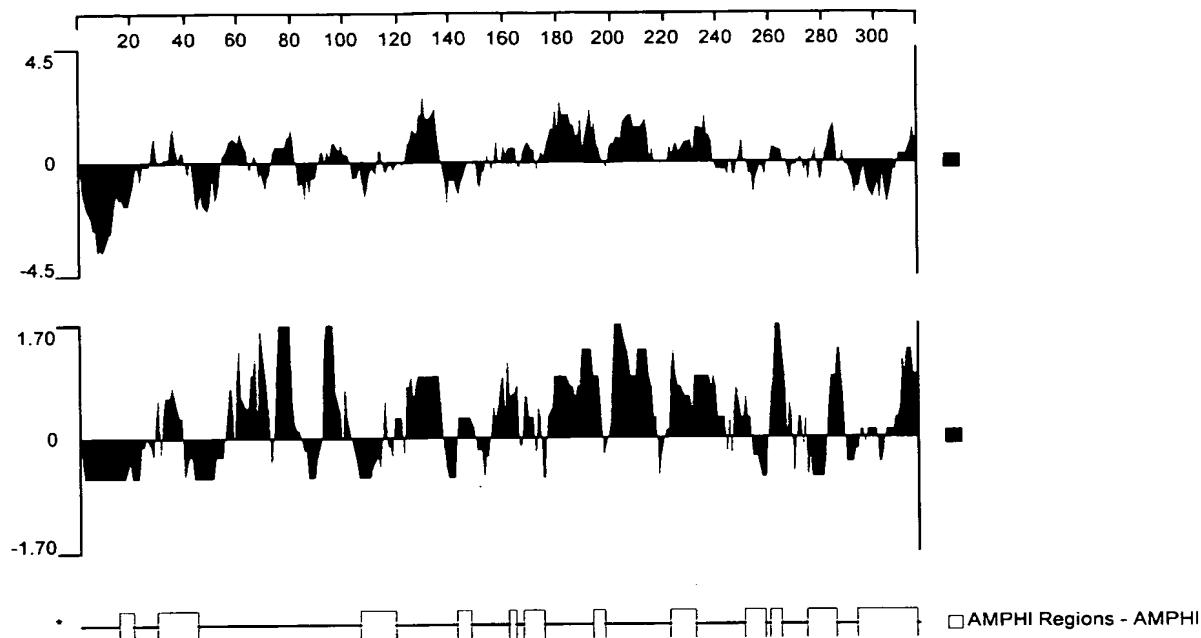
**519-1****Hydrophilicity Plot, Antigenic Index and AMPHI Regions**

Fig. 13

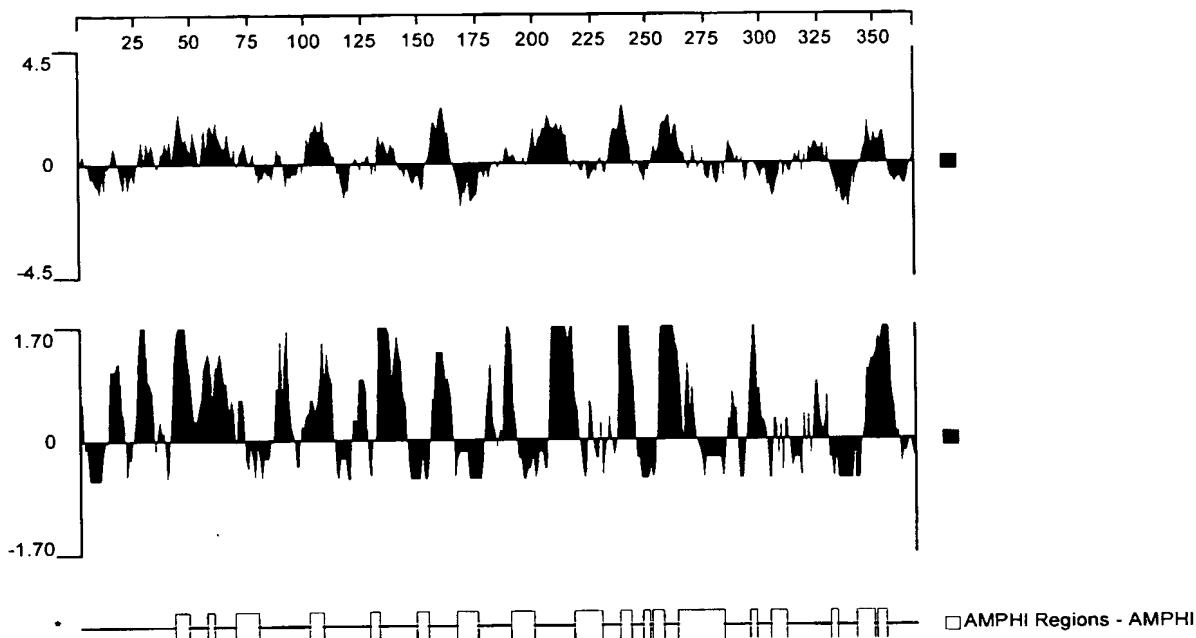
**121-1****Hydrophilicity Plot, Antigenic Index and AMPHI Regions**

Fig. 14

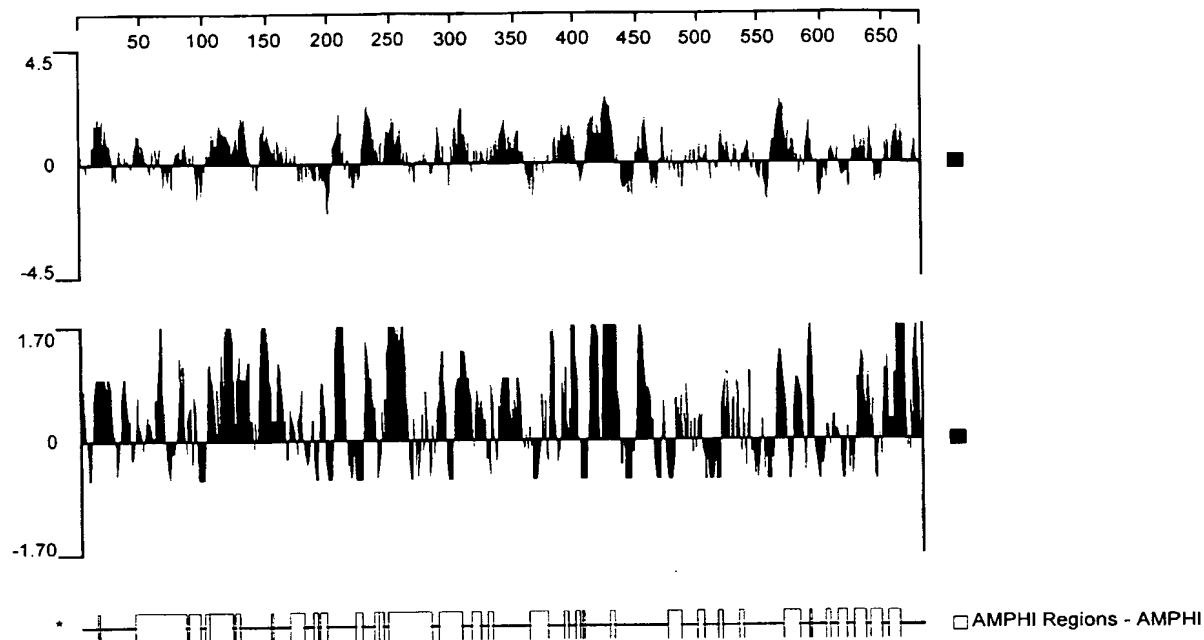
128-1Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 15

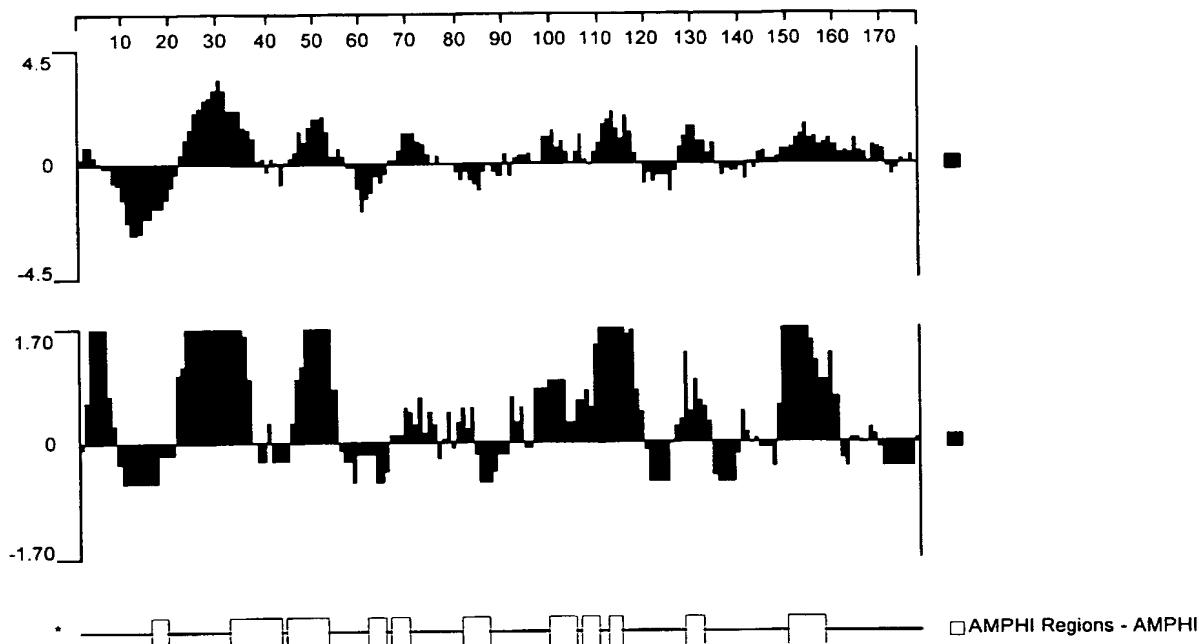
**206****Hydrophilicity Plot, Antigenic Index and AMPHI Regions**

Fig. 16

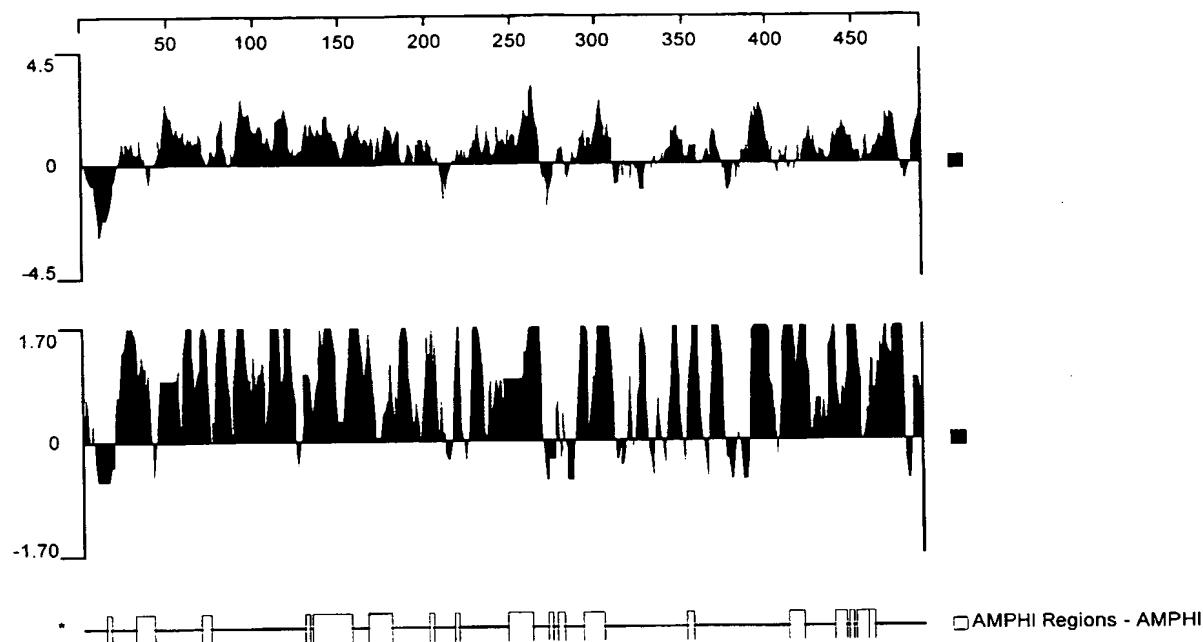
287Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 17

406

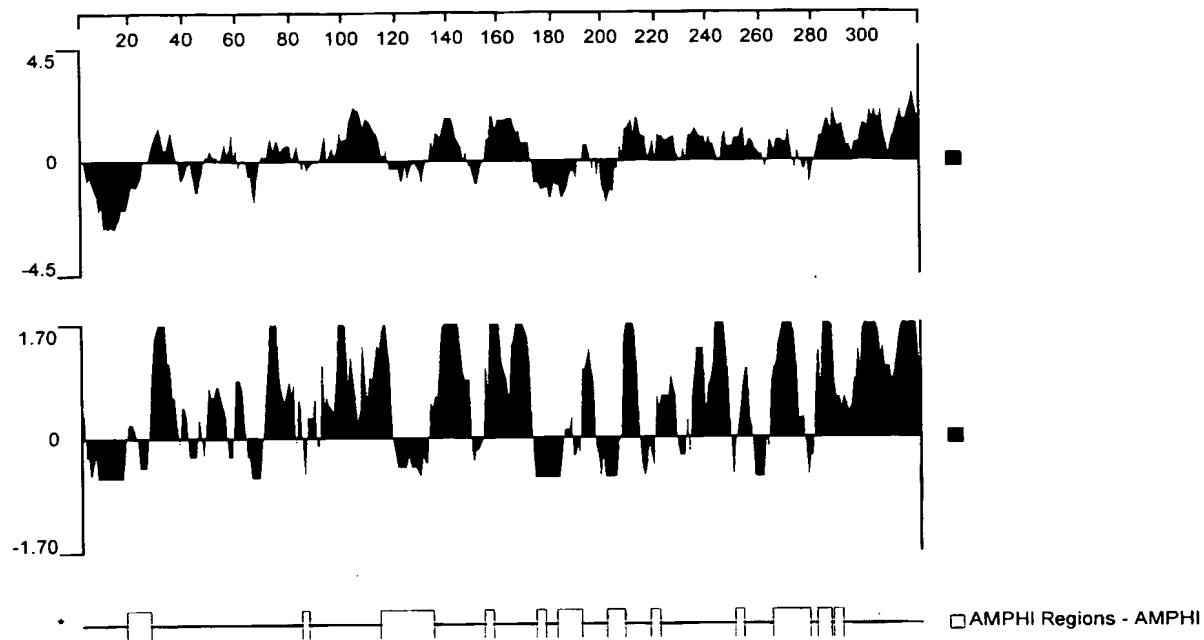
Hydrophilicity Plot, Antigenic Index and AMPHI Regions

Fig. 18

zo05_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo08_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
z2491	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo11_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo20_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo01_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo09_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo12_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo22_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo23_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo24_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo25_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo26_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo96_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo02_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo04_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo06_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo07_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo10_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo14_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo16_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo17_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo18_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo19_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo21_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo27_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo28_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo29_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo13_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo03_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo15_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
fa1090	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo32_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo33_225	1	MDSFFKPAVVAVLWLMFAVRPALADELTNLLSSREQILRQFAEDEQPVLPINRAPARRAG
zo05_225	61	NADELIGSAMGLNE . . . . .
zo08_225	61	NADELIGSAMGLNE . . . . .
z2491	61	NADELIGSAMGLNEQPVLPVNRVPARRAGNADELIGSAMGLNEQPVLPVNRVPARRAGNA
zo11_225	61	NADELIGSAMGLNEQPVLPVNRVPARRAGNADELIGSAMGLNEQPVLPVNRVPARRAGNA
zo20_225	61	NADELIGSAMGLNEQPVLPVNRVPARRAGNADELIGSAMGLNEQPVLPVNRVPARRAGNA
zo01_225	61	NADELIGSAMGLNE . . . . .
zo09_225	61	NADELIGSAMGLNE . . . . .
zo12_225	61	NADELIGSAMGLNE . . . . .
zo22_225	61	NADELIGSAMGLNE . . . . .
zo23_225	61	NADELIGSAMGLNE . . . . .
zo24_225	61	NADELIGSAMGLNE . . . . .
zo25_225	61	NADELIGSAMGLNE . . . . .
zo26_225	61	NADELIGSAMGLNE . . . . .
zo96_225	61	NADELIGSAMGLNE . . . . .
zo02_225	61	NADELIGSAMGLNE . . . . .
zo04_225	61	NADELIGSAMGLNE . . . . .
zo06_225	61	NADELIGSAMGLNE . . . . .
zo07_225	61	NADELIGSAMGLNE . . . . .
zo10_225	61	NADELIGSAMGLNE . . . . .
zo14_225	61	NADELIGSAMGLNE . . . . .
zo16_225	61	NADELIGSAMGLNE . . . . .
zo17_225	61	NADELIGSAMGLNE . . . . .
zo18_225	61	NADELIGSAMGLNE . . . . .
zo19_225	61	NADELIGSAMGLNE . . . . .
zo21_225	61	NADELIGSAMGLNE . . . . .
zo27_225	61	NADELIGSAMGLNE . . . . .
zo28_225	61	NADELIGSAMGLNE . . . . .
zo29_225	61	NADELIGSAMGLNE . . . . .
zo13_225	61	NADELIGSAMGLNE . . . . .
zo03_225	61	NADELIGSAMGLNE . . . . .
zo15_225	61	NADELIGSAMGLNE . . . . .
fa1090	61	NADELIGSAMGLNE . . . . .
zo32_225	61	NADELIGSAMGLNE . . . . .
zo33_225	61	NADELIGSAMGLNE . . . . .

FIG. 19A

FIG. 19B

zo05_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo08_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
z2491	241	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo11_225	241	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo20_225	241	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo01_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo09_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo12_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo22_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo23_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo24_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo25_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo26_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo96_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo02_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo04_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo06_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo07_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo10_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo14_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo16_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo17_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo18_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo19_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo21_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo27_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo28_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo29_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo13_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo03_225	212	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo15_225	183	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
fa1090	183	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo32_225	183	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*
zo33_225	183	IHAPRTGKNIEITSLSHKYWSGKYAFARRVKNDPSRFLN*

Fig. 19C

**FIG. 20A**

gnmzq09	121	YQILD SVTTVSAKARLVD SRNGKVLWSGSASIREGSNNNSNGLLGALVSAVNQIANSLT
gnmzq31	121	YQILD SVTTVSAKARLVD SRNGKVLWSGSASIREGSNNNSNGLLGALVGA VVNQIANSLT
fa1090	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVGA VVNQIANSLT
gnmzq32	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVGA VVNQIANSLT
gnmzq33	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVGA VVNQIANSLT
gnmzq01	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq05	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq08	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq02	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq03	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq04	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq07	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq10	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq11	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq13	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq15	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq16	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq17	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq19	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq21	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq22	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq23	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq24	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq25	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq27	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq28	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq29	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
z2491	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVSAVNQIANNLT
gnmzq14	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVGA VVNQIANSLT
gnmzq18	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVGA VVNQIANSLT
gnmzq26	121	YQILD SVTTVSAKARLVD SRNGKELWWSGSASIREGSNNNSNGLLGALVGA VVNQIANSLT
gnmzq09	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq31	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
fa1090	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq32	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq33	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq01	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq05	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq08	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq02	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq03	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq04	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq07	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq10	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq11	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq13	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq15	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq16	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq17	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq19	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq21	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq22	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq23	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq24	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq25	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq27	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq28	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq29	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
z2491	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq14	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq18	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*
gnmzq26	181	DRGYQVS KTAAYNLLSPYSHNGILKGPRFVEEQPK*

FIG. 20B

287_14	1	MFKRSVIAMACIFALSACGGGGGGSPDVKSADTLSKPAAPVVSE	. . . . .	KETEA
287_2	1	MFKRSVIAMACIFALSACGGGGGGSPDVKSADTLSKPAAPVVSE	. . . . .	KETEA
287_21	1	MFKRSVIAMACIFALSACGGGGGGSPDVKSADTLSKPAAPVVSE	. . . . .	KETEA
z2491	1	MFKRSVIAMACIFALSACGGGGGGSPDVKSADTLSKPAAPVVSE	. . . . .	KETEA
287_9	1	MFKRSVIAMACIVALSACGGGGGGSPDVKSADTLSKPAAPVVTEDVGEVLPKEKKDDEEA	. . . . .	
fa1090	1	MFKRSVIAMACIFPLSACGGGGGGSPDVKSADTPSKPAAPVVAENAGEGVLPKEKKDDEEA	. . . . .	
287_14	50	KEDAPQAGSQGOGAPSQAQGGQDMAAVSEENTNGGAAATDKPKNEDEGAQNDMPQNAADT	. . . . .	
287_2	50	KEDAPQAGSQGOGAPSQAQGGQDMAAVSEENTNGGAAATDKPKNEDEGAQNDMPQNAADT	. . . . .	
287_21	50	KEDAPQAGSQGOGAPSQAQGSQDMAAVSEENTNGGAAVTADNPKNEDEVQNDMPQNAAGT	. . . . .	
z2491	50	KEDAPQAGSQGOGAPSQAQGSQDMAAVSEENTNGGAAVTADNPKNEDEVQNDMPQNAAGT	. . . . .	
287_9	61	VSGAPQADT. . QDATAKGQQDMAAVSAENTNGGAATTDDNPENKDEGFQNDMPQNAADT	. . . . .	
fa1090	61	AGGAPQADT. . QDATAAGEGSQDMAAVSAENTNGGAATTDDNPKNEDAGAQNDMPQNAAA..	. . . . .	
287_14	110	DSSLTPNHTPASNMPAGNMENQAPDAGESEQPANQPDMANADGMQGDDPSAGGENAGNTA	. . . . .	
287_2	110	DSSLTPNHTPASNMPAGNMENQAPDAGESEQPANQPDMANADGMQGDDPSAGGENAGNTA	. . . . .	
287_21	110	DSSTPNHTPPDPNMLAGNMENQATDAGESQPANQPDMANADGMQGDDPSAGGENAGNTA	. . . . .	
z2491	110	DSSTPNHTPPDPNMLAGNMENQATDAGESQPANQPDMANADGMQGDDPSAGGENAGNTA	. . . . .	
287_9	119	DSSTPNHTPAPNMPTRDMGNQAPDAGESAQPANQPDMANADGMQGDDPSAGGENAGNTA	. . . . .	
fa1090	117	.....	. . . . .	
287_14	170	AQGTNQAENNQTAGSQNPASSNTNPSSATNSGGDFGRTNVGNSVYIDGPSQNITLTHCKGDS	. . . . .	
287_2	170	AQGTNQAENNQTAGSQNPASSNTNPSSATNSGGDFGRTNVGNSVYIDGPSQNITLTHCKGDS	. . . . .	
287_21	170	AQGANQAGNNQAGSSDPPIPASNPAPANGGSNFGRVDIANGVYIDGPSQNITLTHCKGDS	. . . . .	
z2491	170	AQGANQAGNNQAGSSDPPIPASNPAPANGGSNFGRVDIANGVYIDGPSQNITLTHCKGDS	. . . . .	
287_9	178	DQANQAEENNQVGGSQNPASSNTNPNTNGGSDFGRINVANGEKIDSGSENMTLTHCKDKV	. . . . .	
fa1090	117	.ESANQFTGNNQPGSSSDSAPASNPAPANGGSDFGRTNVGNSVYIDGPSQNITLTHCKGDS	. . . . .	
287_14	230	CSGNNFLDDEEVQLKSEFEKLSDADKISNYKKDGKNDKFVGLVADSQVMKGINQYII	. . . . .	
287_2	230	CSGNNFLDDEEVQLKSEFEKLSDADKISNYKKDGKNDKFVGLVADSQVMKGINQYII	. . . . .	
287_21	230	CSGNNFLDDEEVQLKSEFEKLSDADKISNYKKDGKNDKFVGLVADSQVMKGINQYII	. . . . .	
z2491	230	CSGNNFLDDEEVQLKSEFEKLSDADKISNYKKDGKNDKFVGLVADSQVMKGINQYII	. . . . .	
287_9	238	CDRD.FLDEEAPPKSEFEKLSDEEKINKYKK. . . DEQRENFVGLVADRVEKNGTNKYII	. . . . .	
fa1090	176	CNGDNLLDDEEAPS KSEFEKLSDEEKIKRYKK. . . DEQRENFVGLVADRVKKDGTNKYII	. . . . .	
287_14	290	FYKPKP. . . SFARFRRSARSRRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSGNIFAPEG	. . . . .	
287_2	290	FYKPKP. . . SFARFRRSARSRRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSGNIFAPEG	. . . . .	
287_21	286	FYKPKP. . . SFARFRRSARSRRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSGNIFAPEG	. . . . .	
z2491	286	FYKPKP. . . SFARFRRSARSRRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSGNIFAPEG	. . . . .	
287_9	293	IYKDKSASSSSARFRRSARSRRSLPAEMPLIPVNQADTLIVDGEAVSLTGHSGNIFAPEG	. . . . .	
fa1090	232	FYTDKPKPT. . . RSARSRRSLPAEPLIPVNQADTLIVDGEAVSLTGHSGNIFAPEG	. . . . .	
287_14	348	NYRYLTGYAEKLPGGSYALRVQGEPSKGEMLAGTAVNGEVLHFHTENGRPSPEGRGRFAA	. . . . .	
287_2	348	NYRYLTGYAEKLPGGSYALRVQGEPSKGEMLAGTAVNGEVLHFHTENGRPSPEGRGRFAA	. . . . .	
287_21	344	NYRYLTGYAEKLPGGSYALRVQGEPAKGEMLAGAAYNGEVLHFHTENGRPYPERGRGRFAA	. . . . .	
z2491	344	NYRYLTGYAEKLPGGSYALRVQGEPAKGEMLAGAAYNGEVLHFHTENGRPYPERGRGRFAA	. . . . .	
287_9	353	NYRYLTGYAEKLPGGSYALRVQGEPAKGEMLAGTAVNGEVLHFHMENGRPSPEGRGRFAA	. . . . .	
fa1090	285	NYRYLTGYAEKLPGGSYALRVQGEPAKGEMLVGTTAVNGEVLHFHMENGRPYPSGRGRFAA	. . . . .	
287_14	408	KVDFGSKSVDGIIDSGLHMGQTQKFKAIDGNGFKGTWTENG	GGDVSGKFYGPAGEEEVA	
287_2	408	KVDFGSKSVDGIIDSGLHMGQTQKFKAIDGNGFKGTWTENG	GGDVSGKFYGPAGEEEVA	
287_21	404	KVDFGSKSVDGIIDSGLHMGQTQKFKAIDGNGFKGTWTENG	GGDVSGKFYGPAGEEEVA	
z2491	404	KVDFGSKSVDGIIDSGLHMGQTQKFKAIDGNGFKGTWTENG	GGDVSGKFYGPAGEEEVA	
287_9	413	KVDFGSKSVDGIIDSGLHMGQTQKFKAVIDGNGFKGTWTENG	GGDVSGRFYGPAGEEEVA	
fa1090	345	KVDFGSKSVDGIIDSGLHMGQTQKFKAIDGNGFKGTWTENG	GGDVSGRFYGPAGEEEVA	

FIG. 21A

287_14	468	GKYSYRPTDAEKGGFGVFA <b>G</b> KKEQD*
287_2	468	GKYSYRPTDAEKGGFGVFA <b>G</b> KKEQD*
287_21	464	GKYSYRPTDAEKGGFGVFA <b>G</b> KKEQD*
z2491	464	GKYSYRPTDAEKGGFGVFA <b>G</b> KKEQD*
287_9	473	GKYSYRPTDAEKGGFGVFA <b>G</b> KKEQD*
fa1090	405	GKYSYRPTDAEKGGFGVFA <b>G</b> KKEQD*

FIG. 21B

z2491_519	1	MEFFIILLAAVVVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv26_519	1	MEFFIILLAAVVVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv22_519ass	1	MEFFIILLAAVVVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
fa1090_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv32_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv11_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv28_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv96_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv02_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv03_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv04_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv05_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv01_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv07_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv12_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv18_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv19_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv21_519ass	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv27_519	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv20_519ass	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv06_519ass	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL
zv29_519ass	1	MEFFIILLAAVAVFGFKSFVVIPQQEHHVVERLGRFHRLTAGLNILIPFIDRVAYRHSL

z2491_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv26_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv22_519ass	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
fa1090_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv32_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv11_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv28_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv96_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv02_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv03_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv04_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv05_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv01_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv07_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv12_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv18_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv19_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv21_519ass	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv27_519	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv20_519ass	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv06_519ass	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG
zv29_519ass	61	KEIPLDVPSQVCITRDNTQLTVGDIIYFQVTDPKLASYGSSNYIMAITQLAQTTLRSVIG

z2491_519	121	RMELDKTFEERDEINSTVVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv26_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv22_519ass	121	RMELDKTFEERDEINSTVVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
fa1090_519	121	RMELDKTFEERDEINSTVVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv32_519	121	RMELDKTFEERDEINSTVVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv11_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv28_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv96_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv02_519	121	RMELDKTFEERDEINSTVVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv03_519	121	RMELDKTFEERDEINSTVVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv04_519	121	RMELDKTFEERDEINSTVVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv05_519	121	RMELDKTFEERDEINSTVVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv01_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv07_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv12_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv18_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv19_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv21_519ass	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv27_519	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv20_519ass	121	RMELDKTFEERDEINSTVVAALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv06_519ass	121	RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE
zv29_519ass	121	RMELDKTFEERDEINSTVVSALDEAAGAWGVKVLRYEIKDLVPPQEILRSMQAQITAERE

FIG. 22A

z2491_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv26_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv22_519ass	181	KRARIAESEGRKIEQINLASGQREAKIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
fa1090_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv32_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv11_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv28_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv96_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv02_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv03_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv04_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv05_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv01_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv07_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv12_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv18_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv19_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv21_519ass	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv27_519	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv20_519ass	181	KRARIAESEGRKIEQINLASGQREAEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv06_519ass	181	KRARIAESEGRKIEQINLASGQREDEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR
zv29_519ass	181	KRARIAESEGRKIEQINLASGQREDEIQQSEGEAQAAVNASNAEKIARINRAKGEAESLR

z2491_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv26_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv22_519ass	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
fa1090_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv32_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv11_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv28_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv96_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv02_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv03_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv04_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv05_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv01_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv07_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv12_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv18_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv19_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv21_519ass	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv27_519	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv20_519ass	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv06_519ass	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL
zv29_519ass	241	LVAEANAEAIRQIAAAALQTQGGADAVNLKIAEQYVAFFNNLAKESNTLIMPANVADIGSL

z2491_519	301	ISAGMKIIDSSKTAK*
zv26_519	301	ISAGMKIIDSSKTAK*
zv22_519ass	301	ISAGMKIIDSSKTAK*
fa1090_519	301	ISAGMKIIDSSKTAK*
zv32_519	301	ISAGMKIIDSSKTAK*
zv11_519	301	ISAGMKIIDSSKTAK*
zv28_519	301	ISAGMKIIDSSKTAK*
zv96_519	301	ISAGMKIIDSSKTAK*
zv02_519	301	ISAGMKIIDSSKTAK*
zv03_519	301	ISAGMKIIDSSKTAK*
zv04_519	301	ISAGMKIIDSSKTAK*
zv05_519	301	ISAGMKIIDSSKTAK*
zv01_519	301	ISAGMKIIDSSKTAK*
zv07_519	301	ISAGMKIIDSSKTAK*
zv12_519	301	ISAGMKIIDSSKTAK*
zv18_519	301	ISAGMKIIDSSKTAK*
zv19_519	301	ISAGMKIIDSSKTAK*
zv21_519ass	301	ISAGMKIIDSSKTAK*
zv27_519	301	ISAGMKIIDSSKTAK*
zv20_519ass	301	ISAGMKIIDSSKTAK*
zv06_519ass	301	ISAGMKIIDSSKTAK*
zv29_519ass	301	ISAGMKIIDSKTAK*

FIG. 22B

**FIG. 23A**

fa1090	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDRRTERARFPIYGIPDDFISVPLPAGLRGGKNA
zm33asbc	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDRRTERARFPIYGIPDDFISVPLPAGLRGGKNA
zm32asbc	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDRRTERARFPIYGIPDDFISVPLPAGLRGGKNA
zm23asbc	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm27bc	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm09	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm10	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm24	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm25	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm14	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm04	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm11asbc	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm08n	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm96	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm01	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm02	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm03	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm07	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm12	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm18	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm19	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm20	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm21	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm06	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm17	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm13	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm05	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
z2491	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm22	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm26	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm28	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm29asbc	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm16	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm15	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
zm31asbc	121	YFTPWQVAGNGSLAGTVTGYYEVLKGDDDRRTAQARFPIYGI
fa1090	181	LVRIRQTGKNSGTIDNAGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm33asbc	181	LVRIRQTGKNSGTIDNAGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm32asbc	181	LVRIRQTGKNSGTIDNAGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm23asbc	181	LVRIRQTGKNSGTIDNAGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm27bc	181	LVRIRQTGKNSGTIDNAGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm09	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm10	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm24	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm25	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm14	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm04	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm11asbc	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm08n	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm96	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm01	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm02	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm03	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm07	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm12	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm18	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm19	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm20	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm21	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm06	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm17	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm13	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm05	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
z2491	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm22	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm26	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm28	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm29asbc	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm16	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm15	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL
zm31asbc	181	LVRIRQTGKNSGTIDNTGGHTADLSRFPIARTTAIKGRFEGRFLPYHTRNQINGGAL

FIG. 23B

FIG. 23C

fa1090	361	EDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm33asbc	361	EDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm32asbc	361	EDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm23asbc	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm27bc	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm09	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm10	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm24	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm25	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm14	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm04	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm11asbc	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm08n	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm96	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm01	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm02	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm03	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm07	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm12	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm18	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm19	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm20	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm21	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm06	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm17	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm13	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm05	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
z2491	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm22	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm26	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm28	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm29asbc	361	VDRHYITLGAPLFVATDHPTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm16	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm15	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
zm31asbc	361	VDRHYITLGAPLFVATAHPVTRKALNRLIMAQDTGSAIKGAVRVDYFWGYGDEAGELAGK
fa1090	421	QKTTGYVWQLLPNGMKPEYRP*
zm33asbc	421	QKTTGYVWQLLPNGMKPEYRP*
zm32asbc	421	QKTTGYVWQLLPNGMKPEYRP*
zm23asbc	421	MKEPGYVWQLLPNGMKPEYRP*
zm27bc	421	MKEPGYVWQLLPNGMKPEYRP*
zm09	421	QKTTGYVWQLLPNGMKPEYRP*
zm10	421	QKTTGYVWQLLPNGMKPEYRP*
zm24	421	QKTTGYVWQLLPNGMKPEYRP*
zm25	421	QKTTGYVWQLLPNGMKPEYRP*
zm14	421	QKTTGYVWQLLPNGMKPEYRP*
zm04	421	QKTTGYVWQLLPNGMKPEYRP*
zm11asbc	421	QKTTGYVWQLLPNGMKPEYRP*
zm08n	421	QKTTGYVWQLLPNGMKPEYRP*
zm96	421	QKTTGYVWQLLPNGMKPEYRP*
zm01	421	QKTTGYVWQLLPNGMKPEYRP*
zm02	421	QKTTGYVWQLLPNGMKPEYRP*
zm03	421	QKTTGYVWQLLPNGMKPEYRP*
zm07	421	QKTTGYVWQLLPNGMKPEYRP*
zm12	421	QKTTGYVWQLLPNGMKPEYRP*
zm18	421	QKTTGYVWQLLPNGMKPEYRP*
zm19	421	QKTTGYVWQLLPNGMKPEYRP*
zm20	421	QKTTGYVWQLLPNGMKPEYRP*
zm21	421	QKTTGYVWQLLPNGMKPEYRP*
zm06	421	QKTTGYVWQLLPNGMKPEYRP*
zm17	421	QKTTGYVWQLLPNGMKPEYRP*
zm13	421	QKTTGYVWQLLPNGMKPEYRP*
zm05	421	QKTTGYVWQLLPNGMKPEYRP*
z2491	421	QKTTGYVWQLLPNGMKPEYRP*
zm22	421	QKTTGYVWQLLPNGMKPEYRP*
zm26	421	QKTTGYVWQLLPNGMKPEYRP*
zm28	421	QKTTGYVWQLLPNGMKPEYRP*
zm29asbc	421	QKTTGYVWQLLPNGMKPEYRP*
zm16	421	QKTTGYVWQLLPNGMKPEYRP*
zm15	421	QKTTGYVWQLLPNGMKPEYRP*
zm31asbc	421	QKTTGYVWQLLPNGMKPEYRP*

FIG. 23D

## INTERNATIONAL SEARCH REPORT

In International Application No  
PCT/EP99/09346

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 6 C12N15/31 C07K14/22 C07K16/12 C12Q1/68 A61K39/095  
 G01N33/50

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C12N C07K C12Q A61K G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE TREMBL [Online]    EMBL    ID Q55666, AC Q55666,    1 November 1996 (1996-11-01)    TABATA S: "Membrane-bound lytic    transglycosylase A MltA Synechocystis sp.    strain PCC 6803"    XP002130156    Note: 100% aa seq identity of aa 342-350    with aa 392-400 of SEQ ID NOS 2790 and    2792, 27.6% (26.9%) aa seq identity with    SEQ ID NO:2790 (2792) in 370 (387) aa    overlap.    the whole document</p> <p>---</p> <p>-/-</p>	1, 4-6, 9, 12

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

## \* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority, claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "V" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "G" document member of the same patent family

Date of the actual completion of the international search

26 May 2000

Date of mailing of the international search report

19 5 06.00

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van de Kamp, M

## INTERNATIONAL SEARCH REPORT

In **Int'l Application No**  
**PCT/US99/09346**

**C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT**

<b>Category</b>	<b>Citation of document, with indication, where appropriate, of the relevant passages</b>	<b>Relevant to claim No.</b>
X	EP 0 818 465 A (BIOLOG MOLECULAIRE DES PLANTES ; INST OF MOLECULAR BIOTECHNOLOGY (DE) 14 January 1998 (1998-01-14) Note: 100% nt seq identity of nt 367951-367961 of SEQ ID NO:1 with nt 163-173 of SEQ ID NO:2789. page 108 ---	8,11,12
A	LOMMATZSCH J ET AL.: "Outer membrane localization of murein hydrolases: MltA, a third lipoprotein lytic transglycosylase in Escherichia coli" JOURNAL OF BACTERIOLOGY, vol. 179, no. 17, September 1997 (1997-09), pages 5465-5470, XP002130154 Note: 33.7% (35.7%) aa seq identity with SEQ ID NO:2790 (2792) in 273 (207) aa overlap. abstract ---	1-12
A	DILLARD J P ET AL.: "A peptidoglycan hydrolase similar to bacteriophage endolysins acts as an autolysin in Neisseria gonorrhoeae" MOLECULAR MICROBIOLOGY, vol. 25, no. 5, September 1997 (1997-09), pages 893-901, XP000878964 abstract ---	1-12
A	WO 96 29412 A (IAF BIO VAC INC ; BRODEUR BERNARD R (CA); MARTIN DENIS (CA); HAMEL) 26 September 1996 (1996-09-26) cited in the application the whole document examples 1-12 ---	1-18
A	WO 94 08013 A (OREGON STATE) 14 April 1994 (1994-04-14) the whole document examples 1-7 ---	1-18
A	WO 92 13871 A (UNIV WASHINGTON) 20 August 1992 (1992-08-20) the whole document examples 1-10 ---	1-18
A	BLAKE M S ET AL.: "Vaccines for gonorrhoea: where are we on the curve?" TRENDS IN MICROBIOLOGY, vol. 3, no. 12, December 1995 (1995-12), pages 469-474, XP000876514 the whole document ---	1-18
	-/-	

## INTERNATIONAL SEARCH REPORT

Int'l Application No

Fr 99/09346

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	POOLMAN J T: "Development of a meningococcal vaccine" INFECTIOUS AGENTS AND DISEASE, vol. 4, no. 1, March 1995 (1995-03), pages 13-28, XP000876540 the whole document ---	1-18
X	WO 96 01901 A (RHONE POULENC RORER SA ;BLANC VERONIQUE (FR); THIBAUT DENIS (FR);) 25 January 1996 (1996-01-25) Note: 100% nt seq ident of bp 170-156 of SEQ ID NO:1 (rev DNA) with bp 202-216 of SEQ ID NO:1 (61.2% in 348 bp overlap), 40.7% seq ident of transl SEQ ID NO:1 with SEQ ID NO:2 in 118 aa overlap. page 102-104 example 1 ---	8,11,12
X	WO 97 37044 A (ASTRA AB ;ALM RICHARD A (US); SMITH DOUGLAS (US)) 9 October 1997 (1997-10-09) Note: 100% aa seq identity of aa 204-211, 186-193 & 352-359 of transl SEQ ID NOS 227, 345 & 1003, resp., with aa 59-66 of SEQ ID NO:2, 37.4% aa seq identity with SEQ ID NO:2 in 115 aa overlap. page 268-269 page 344 page 909-910 page 23, paragraph B.4 ---	4,12-14
X	DATABASE SWISSPROT [Online] ID YPCP_YEREN, AC P31485, 1 July 1993 (1993-07-01) BAEUMLER A J ET AL.: "Hypothetical 29.6 kD protein in PCP 5' region (ORF1)" XP002138650 Note: 100% aa seq identity of aa 148-159 with aa 140-151 of SEQ ID NO:442, 43.4% aa seq identity with SEQ ID NO:442 in 256 aa overlap. the whole document -& BAUMLER A J ET AL.: "A lipoprotein of Yersinia enterocolitica facilitates ferrioxamine uptake in Escherichia coli" JOURNAL OF BACTERIOLOGY, vol. 174, no. 3, February 1992 (1992-02), pages 1029-1035, XP000907295 page 1031, left-hand column, line 11 -right-hand column, line 15 ---	4,12
A	-/-	4,12

## INTERNATIONAL SEARCH REPORT

Int'l Application No
PCT/US99/09346

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE SWISSPROT [Online]            ID YDHH_HAEIN, AC P44861,            1 November 1995 (1995-11-01)            FLEISCHMANN R D ET AL.: "Hypothetical            protein HI0753"            XP002138651            Note: 100% aa seq identity of aa 143-156            with aa 140-153 of SEQ ID NO:442, 41.6% aa            seq identity with SEQ ID NO:442 in 377 aa            overlap.            the whole document</p> <p>---</p>	4,12
X	<p>WO 96 33276 A (HUMAN GENOME SCIENCES INC            ;UNIV JOHNS HOPKINS (US))            24 October 1996 (1996-10-24)</p> <p>Note: 100% nt seq identity of bp            816794-816807 with bp 289-302 of SEQ ID            NO:441 (54.3% in 484 bp overlap), 100% aa            seq identity of translated sequence with            SEQ ID NO:442 in 14 aa overlap.</p> <p>page 77.488</p> <p>Note: 100% nt seq identity of bp            230516-230526 with bp 1501-1511 of SEQ ID            NO:489 (57.4% in 1292 bp overlap), 100% aa            seq identity of translated sequence with            SEQ ID NO:490 in 13 aa overlap.</p> <p>page 77.139</p> <p>page 76.37, line HI0215</p> <p>Note: 100% nt seq identity of bp            1025409-1025418 with bp 1339-1330 (rev            strand) of SEQ ID NO:1201 (72.0% in 50 bp            overlap).</p> <p>page 77.612</p> <p>---</p>	4,8, 11-14
X	<p>CONLIN C A ET AL.: "Escherichia coli prlC            encodes an endopeptidase and is homologous            to the <i>Salmonella typhimurium opdA</i> gene"            JOURNAL OF BACTERIOLOGY,            vol. 174, no. 18,            September 1992 (1992-09), pages 5881-5997,            XP000907300</p> <p>Note: 100% nt seq ident of bp 1824-1837            with bp 1480-1493 of SEQ ID NO:489 (59.7%            in 1282 bp overlap), 100% aa seq ident of            aa 495-507 with aa 492-504 of SEQ ID            NO:490 (49.5% in 679 aa overlap).</p> <p>abstract            figure 2</p> <p>---</p> <p>-/-</p>	4,8,11, 12

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE SWISSPROT [Online]            ID OPDA_HAEIN, AC P44573,            1 November 1995 (1995-11-01)            FLEISCHMANN R D ET AL.: "Oligopeptidase A            (EC 3.4.24.70)"            XP002138652</p> <p>Note: 100% aa seq identity of aa 496-508            with aa 492-504 of SEQ ID NO:490, 49.0% aa            seq identity in 677 aa overlap.            the whole document</p> <p>---</p>	4,12
X	<p>ROKBI B ET AL.: "Evaluation of            recombinant transferrin - binding protein            B variants from <i>Neisseria meningitidis</i> for            their ability to induce cross-reactive and            bactericidal antibodies against a            genetically diverse collection of            serogroup B strains."  <i>INFECTION AND IMMUNITY</i>,            vol. 65, no. 1, January 1997 (1997-01),            pages 55-63, XP002138643            abstract</p> <p>---</p>	5
P,A	<p>DATABASE TREMBL [Online]            EMBL            ID 069750, AC 069750,            1 August 1998 (1998-08-01)            ROKBI B ET AL.: "Transferrin binding            protein B, TbpB, <i>Neisseria meningitidis</i>"            XP002138653</p> <p>Note: 22.3% aa seq identity with SEQ ID            NO:1202 in 488 aa overlap.            the whole document</p> <p>-&amp; ROKBI B ET AL.: "Heterogeneity of            tpbB, the transferrin-binding protein B            gene, among serogroup B <i>Neisseria</i>  <i>meningitidis</i> strains of the ET-5 complex"  <i>CLINICAL AND DIAGNOSTIC LABORATORY</i>  <i>IMMUNOLOGY</i>,            vol. 4, no. 5, September 1997 (1997-09),            pages 522-529, XP002138644            abstract</p> <p>---</p>	4,8, 12-15,17
A	<p>---</p> <p>-/-</p>	5,8, 12-15,17

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP99/09346

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>DATABASE GCG_GENESEQ [Online]            ID W14640, AC_W14640,            5 March 1998 (1998-03-05)            QUENTIN-MILLET M J ET AL.: "N.            meningitidis HTR Tbp2 (del3777-385,            del407-465, del488-508)"            XP002138654            Note: 23.5% aa seq identity with SEQ ID            NO:1202 in 571 aa overlap.            the whole document</p>	4,8, 12-15,17
A	<p>-&amp; WO 97 13860 A (PASTEUR MERIEUX SERUMS            VACC; QUENTIN MILLET MARIE JOSE (FR);            ROKBI)) 17 April 1997 (1997-04-17)            claim 11</p>	4,8, 12-15,17
X	<p>-----            DATABASE EMPR01 [Online]            EMBL            ID AF034831, AC AF034831,            4 December 1997 (1997-12-04)            YOU Z ET AL.: "Rhizobium etli stomatin            like protein (slp) gene, complete cds."            XP002138655            Note: 100% nt seq ident of bp 4384-4395            with bp 529-540 of SEQ ID NO:1455 (54.4%            in 638 bp overlap), 100% aa seq ident of            aa 1394-1403 with aa 109-118 of SEQ ID            NO:1456 (41.2% in 182 aa overlap).            the whole document</p>	4,8,11, 12
P,X	<p>-&amp; YOU Z ET AL.: "A stomatin-like protein            encoded by the slp gene of Rhizobium etli            is required for nodulation competitiveness            on the common bean"            MICROBIOLOGY,            vol. 144, no. 9, September 1998 (1998-09),            pages 2619-2627, XP000907294            abstract            figure 2</p>	4,8,11, 12
X	<p>-----            HUANG M ET AL.: "A stomatin-like protein            necessary for mechanosensation in C.            elegans"            NATURE,            vol. 378, no. 6554,            16 November 1995 (1995-11-16), pages            292-295, XP002138646            Note: 100% aa seq identity of aa 233-239            with aa 110-117 of SEQ ID NO:1456, 29.9%            aa seq identity in 234 aa overlap.            abstract            figure 1</p>	4,12
	<p>-----            -/-</p>	

## INTERNATIONAL SEARCH REPORT

Int'l Application No.
PCT/US99/09346

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>WONG C Y ET AL.: "Cloning and characterization of two immunophilin-like genes, ilpA and fkpA, on a single 3.9-kilobase fragment of <i>Aeromonas hydrophila</i> genomic DNA"  <i>JOURNAL OF BACTERIOLOGY</i>, vol. 179, no. 11, June 1997 (1997-06), pages 3397-3403, XP002138647  Note: 100% nt seq ident of bp 2659-2672 with bp 613-626 of SEQ ID NO:1745 (59.2% in 655 bp overlap), 100% aa seq ident of aa 205-216 with aa 200-211 of SEQ ID NO:1746 (44.9% in 265 aa overlap).  abstract  figure 2</p> <p>---</p>	4,8, 11-14
X	<p>DATABASE EMPR02 [Online]  EMBL  ID NE01198, AC U001198,  23 November 1993 (1993-11-23)</p> <p>MCALLISTER C F ET AL.: "Neisseria elongata NRL FKBP immunophilin homolog gene"  XP002138656  Note: 100% nt seq identity of bp 125-138 with bp 635-648 of SEQ ID NO:1745 (65.8% nt seq identity in 237 bp overlap).</p> <p>the whole document</p> <p>-&amp; MCALLISTER C F ET AL.: "Analysis in <i>Neisseria meningitidis</i> and other <i>Neisseria</i> species homologous to the FKBP immunophilin family"  <i>MOLECULAR MICROBIOLOGY</i>, vol. 10, no. 1, October 1993 (1993-10), pages 13-23, XP000907304  abstract  figure 3</p> <p>---</p>	8,11,12
X	<p>SAMPSON B A ET AL.: "Neisseria meningitidis encodes an FK506-inhibitable rotamase"  PROC. NAT'L. ACAD. SCI. USA, vol. 89, no. 4, 15 February 1992 (1992-02-15), pages 1164-1168, XP002138648  Note: 100% nt seq identity of bp 278-288 (284-294) with bp 719-729 of SEQ ID NO:1745 (60.5% nt seq identity in 281 bp overlap).  abstract  figure 2</p> <p>---</p> <p>-/-</p>	8,11,12

## INTERNATIONAL SEARCH REPORT

Int'l Application No.  
PCT/US 99/09346

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HACKER J ET AL.: "Immunophilins: structure-function relationship and possible role in microbial pathogenicity." MOLECULAR MICROBIOLOGY, vol. 10, no. 3, November 1993 (1993-11), pages 445-456, XP000907321 abstract ---	13,14,17
X	DATABASE EMPROL [Online] EMBL ID ECUW93, AC U14003 (partial), 30 November 1994 (1994-11-30) BURLAND V ET AL.: "Escherichia coli K-12 chromosomal region from 92.8 to 00.1 minutes" XP002138657 Note: 100% nt seq identity of bp 37827-37839 with bp 1186-1174 of SEQ ID NO:2791. page 4 -----	8,11,12

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

Invention 1. Claims: 1,3,16,18 (all completely); 2,4-15,17 (all partially)

A protein comprising the amino sequence of SEQ ID NO:2790 or comprising a fragment of at least 7 (preferably consecutive) amino acids of said SEQ ID NO; a protein with 50% or greater homology to said protein(s); an antibody binding to said protein(s); a nucleic acid encoding said protein(s), preferably comprising the nucleotide sequence of SEQ ID NO:2789 or a fragment comprising 10 or more consecutive nucleotides thereof; complementary nucleic acid molecules; compositions comprising said protein(s), nucleic acid(s) or antibody for vaccination, diagnosis or pharmaceutical use, preferably immunogenic compositions comprising said protein(s), and the use of said composition(s).

Invention 2. Claims: 2,4-15,17 (all partially)

A protein comprising an amino sequence according to SEQ ID NO:2 or comprising a fragment of at least 7 consecutive amino acids of said SEQ ID NO; an antibody binding to said protein(s); a nucleic acid encoding said protein(s), preferably comprising a nucleotide sequence according to SEQ ID NO:1 or a fragment comprising 10 or more consecutive nucleotides thereof; complementary nucleic acid molecules; compositions comprising said protein(s), nucleic acid(s) or antibody for vaccination, diagnosis or pharmaceutical use, preferably immunogenic compositions comprising said protein(s), and the use of said composition(s).

Inventions 3-1510. Claims: 2,4,-15,17 (all partially)

Same as invention 2 but for proteins limited to the even-numbered SEQ ID NOs:4-3020 except 2790, and for nucleic acids limited to the corresponding odd-numbered SEQ ID NOs:3-3019 except 2789. E.g., invention 3: limited to SEQ ID NO:4 and SEQ ID NO:3, invention 4: limited to SEQ ID NO:6 and SEQ ID NO:5, . . . , invention 1509: limited to SEQ ID NO:3018 and SEQ ID NO:3017, and invention 1510: limited to SEQ ID NO:3020 and SEQ ID NO:3019.

**Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
  
  
  
  
2.  Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
  
  
  
3.  Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.: 1,3,16,18 (all completely); 2,4-15,17 (all partially). Inventions searched: #1 (SEQ ID NOS 2789/2790), #2 (1/2), #222 (441/442), #246 (489/490), #602 (1201/1202), #729 (1455/1456), #874 (1745/1746), #1397 (2791/2792)
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

**INTERNATIONAL SEARCH REPORT**

or in the patent family members

International Application No.  
PCT/EP 99/09346

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